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TP 1624

Marine Casualty Investigations

Enquêtes sur les accidents maritimes

REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES ATTENDING THE GROUNDING AND REFLOATING OF THE CYPRIOT REGISTERED VESSEL "REEFER KNIGHT", AND SUBSEQUENT ACCIDENT TO A CONSTABLE OF THE ROYAL CANADIAN MOUNTED POLICE, SUMMERSIDE HARBOUR, PRINCE EDWARD ISLAND NOVEMBER 26, 1986.

REPORT No. 472

Investigation Report to the Minister pursuant to sections 542 or 545 of the Canada Shipping Act

Rapport d'investigation au Ministre conformément aux articles 542 ou 545 de la Loi sur la marine marchande du Canada

Canada

Ce rapport est aussi disponible en français.

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REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES ATTENDING THE GROUNDING AND REFLOATING OF THE CYPRIOT REGISTERED VESSEL "REEFER KNIGHT", AND SUBSEQUENT ACCIDENT TO A CONSTABLE OF THE ROYAL CANADIAN MOUNTED POLICE, SUMMERSIDE HARBOUR, PRINCE EDWARD ISLAND NOVEMBER 26, 1986.

Particulars of Vessels

Name	"REEFER KNIGHT"
Official Number	394245
Port of Registry	Limassol
Flag	Cyprus
Call Sign	P.30.I
Gross Tonnage	2,056.31
Net Tonnage	1,108.1
Length	78.11 m
Breadth	12.76 m
Depth	7.52 m
Draught (At time of incident)	4.22 m forward 5.30 m aft
Type	Reefer (general and refrigerated cargo)
Built	1979, Buesum, West Germany
Propulsion	One 6 cylinder diesel engine (1,655 kW) driving one controllable-pitch propeller, controlled from the navigation bridge.
Bow Thruster	Fitted
Cargo	1,678 tonnes potatoes, cheese, onions and Christmas trees.
Crew	15
Classification	Germanischer Lloyd

Owner	Sardinia Shipping Company Limassol, Cyprus
Local Agent	Cairns Produce Ltd. Summerside, P.E.I.

Fishing Vessel/Pilot Boat

Name	"DYAN"
Official Number	345351
Port of Registry	Charlottetown, P.E.I.
Gross Tonnage	14.0
Net Tonnage	13.0
Length	12.2 m (40 ft)
Type	Wooden, Cape Island type inshore fishing vessel.
Built	1972, P.E.I.
Propulsion	One 305 hp GM gasoline engine driving one fixed-pitch propeller, operated from steering position.
Crew	One
Owner	Ira Joseph Arsenault Summerside, P.E.I.
Lifesaving Appliances	4 approved lifejackets

Description of Vessels

The "REEFER KNIGHT" is an all-steel refrigerated/general cargo vessel with navigation bridge, engine-room and accommodation situated aft; three holds with tween-decks, capable of transporting cargo at temperatures ranging from cool to frozen are situated forward of the engine-room. She is of 2,056 gross tons and flies the Cypriot flag.

The "DYAN" is an all-wooden inshore fishing vessel of basic design. The forward part has a raised 'forecastle' with a watertight deck; the after-bulkhead of the forecastle

forms the forward bulkhead of the steering/operating position which is fitted with windows above the forecastle deck and a roof over the steering/operating position; this steering position is open at the after end and its deck is continuous with the after deck; steering and operating controls are situated on the port side and a search light on the roof is operated from the same position. (See photograph.)

The "DYAN" is regularly used for commercial fishing but is employed as a pilot-boat as necessary.

NOTE:

1. All times in this report are expressed in Atlantic Standard Time (UTC minus 4 hours).

2. A glossary of abbreviations and terms can be found following the Findings in this report.

3. At the time of the inquiry, the "REEFER KNIGHT" had departed Canada, therefore, details of her navigational equipment and lifesaving appliances were not available, nor was an inspection of her pilot-ladder and ancillary equipment possible.

Background

The "REEFER KNIGHT" had loaded a cargo of agricultural produce, principally potatoes, at Summerside, Prince Edward Island, destined for ports in the West Indies.

After departure from her berth during the late evening of November 26, when under the conduct of a pilot, she grounded on a mud shoal in the harbour in position 46°23'06"N, 63°47'42"W. She re-floated on the next rising tide and proceeded to the pilot disembarking position outside of the harbour. During the time aground, the vessel was boarded by two members of the Royal Canadian Mounted Police (RCMP) in response to allegations that the consumption of alcohol was a contributing factor in the grounding.

After the pilot had disembarked to the pilot-boat, one of the RCMP constables also attempted to disembark but fell into the sea; he was rescued by the pilot and the pilot-boat operator and together with his colleague was transported back to Summerside in the pilot-boat.

The "REEFER KNIGHT" continued her voyage apparently undamaged.

There were no injuries or pollution as a result of this

incident.

Narrative

At 2045, November 26, 1986, the Cypriot registered vessel "REEFER KNIGHT" completed loading a full cargo at her one loading port of Summerside, Prince Edward Island, and started to prepare for sea. During these preparations, numerous shore based persons involved with the loading and shipping of the cargo attended the master's cabin in order to complete the cargo documentation.

Summerside is not a compulsory pilotage area, however, the ship's master required the services of a pilot and at 2126 a pilot for the port boarded and joined the persons in the master's cabin in order to determine what time the vessel would be ready for sea. At 2140 all documentation had been completed and the shore personnel left the ship while the pilot proceeded to the ship's bridge. During his brief stay in the master's cabin, the pilot had been offered two drinks of rum by one of the shore personnel; these he had accepted and drank before proceeding to the bridge; both drinks were stated to consist of approximately 2 liquid ounces of rum mixed with an equal amount of water.

After proceeding to the bridge, the pilot was joined by the master and a helmsman, who was to steer, the vessel's steering control being of the hand telemotor type. These comprised the total number of persons on the bridge until the grounding.

At 2142 the ship was ready to proceed and the pilot took the conduct of the ship. The master was in command and observed the actions of the helmsman as he responded to the pilot's orders; the master also directed the pilot's orders to the engine-room by use of the engine-room telegraph and also operated the bow thruster.

The ship had been secured port side to the wharf and required astern movements of the engine to move away from the wharf.

After the bow had cleared the wharf, the bow thruster was used in conjunction with ahead movements of the engine and port helm in order to turn the vessel with the intention of heading 280° true and proceeding towards the entrance to the channel; then to turn to port when on the ranges and head 252° true into the channel passing DE12 buoy on the port side. (See copy chart CHS 4459.)

The weather conditions at 2200 were: overcast skies and darkness, wind southeast 14 knots, rain mixed with snow flurries, visibility 0.5 mile.

Having turned and proceeded for approximately 7 minutes, the vessel prematurely canted to port and when heading 263° true, grounded at 2155 in a position to the south of the channel entrance with buoy DE12 some 120 m off the starboard bow. Several attempts were made to refloat by use of the ship's engine at full astern but these were unsuccessful and it was decided to await the next rising tide. Tugs are not available at Summerside.

The tide was falling and low water would occur at 0027, November 27, therefore a calculated 4.6 hours would elapse before the tide would again rise to a sufficient height to allow the "REEFER KNIGHT" to re-float. The master advised the Canadian Coast Guard by radiotelephone, Channel 16, at 2218, of the situation.

The linesmen, who had let the ship's moorings go from the shore, not knowing the circumstances aboard the vessel but having observed the grounding, reported it locally. In turn, the RCMP were informed because of an allegation that alcohol impairment might be involved.

Two RCMP constables were then directed to investigate the report and they proceeded to the vessel in the company of the agent, via the pilot-boat, having first acquired an electrically powered breathalyzer machine from their office. They arrived at the vessel at approximately 2330 and had boarded by means of the pilot-ladder by 2345, carrying the breathalyzer. The agent stayed aboard the pilot boat.

The two constables then proceeded to the ship's wheel-house and after speaking to the pilot, concluded that alcohol was involved and requested that the master provide a room where they could prepare the breathalyzer; the master gave them the use of his cabin.

The "REEFER KNIGHT" is of European construction and the electrical receptacles were not compatible to the breatha-lyzer plug; in addition, the ship's voltage was 240-250 (AC), 50 cycles per second as opposed to the Canadian/North American standard of 115 volts (AC), 60 cycles per second. The breathalyzer therefore could not be used on board the ship.

Calculated low water was at 0027 and by 0030, the two constables had decided that the pilot should be transported ashore but, by that time, the tide was beginning to rise and

the master objected to the pilot's removal. The master's fear was that with the rising tide and the wind blowing from the south, and increasing, the ship might re-float at any time and would then face the danger of being blown across the channel and ground on the other side before sufficient speed could be gained for manoeuvring. Under these circumstances he required the services of a pilot and insisted that another pilot be hired before he would dismiss the present one.

There are two pilots based at Summerside, therefore, the services of the other pilot was requested by the radiotelephone (VHF R/T) and in turn by landline telephone.

The pilot-boat had returned to the wharf and the other Summerside pilot arrived at the boat at approximately 0115; however, after carefully reviewing the situation he came to the conclusion that, in view of the passage of time, the pilot already on board the "REEFER KNIGHT", being familiar with the ship and the situation on board, was better able to conduct her out of the harbour. However, the RCMP constables continued to state that in the interests of safety another pilot should be found.

A pilot based at Charlottetown, P.E.I., who was the pilot primarily for that port then became involved in the impasse and advised that the Atlantic Pilotage Authority (APA) should be consulted. A telephone call was then made to an official of the APA in Halifax, Nova Scotia. Hearing both the other pilots' views and in view of the fact that there was no complaint from the ship's master, the decision was made that the original pilot should not be relieved.

Meanwhile the "REEFER KNIGHT" remained aground and the two constables, who still had reservations as to the ship's safety, stayed on board.

The vessel re-floated at 0230 and with the original pilot having the conduct, and seemingly navigating the vessel satisfactorily, proceeded to the pilotage disembarkation position in Bedeque Bay, some 2.6 miles from the berth. The pilot-boat followed astern.

On reaching the disembarkation position at approximately 0300 and heading south-west, the pilot-boat approached the ship. The pilot-ladder had been rigged and floodlit on the starboard (lee) side and the vessel's speed slowed to approximately 4 knots in order that her course and the starboard lee could be maintained while the pilot-boat manoeuvred alongside, with her port side to the ship.

The weather conditions at 0300 were: wind east-south-

east 18 to 27 knots, visibility 3 miles in rain, seas 1 to 2 metres, air temperature 2°C, sea temperature 6°C.

In order to return to shore, the constables decided to accompany the pilot in the pilot-boat; the pilot advised them that he would board the boat first via the pilot-ladder, then take control of the boat while his boat operator assisted the constables with their equipment. They were advised that only one man at a time should descend the pilot-ladder, a distance of some 3 metres, until all had safely disembarked.

The pilot descended the vertical pilot-ladder and at the appropriate moment stepped onto the forecastle deck of the pilot-boat, grasping the handrail on the roof over the operating position. He then stepped into the well-deck and prepared to take over the operation of the boat. The boat operator sheered the boat away from the ship's side to allow the pilot to take over the operation and make his own approach while he (the operator) could step up to the forecastle deck and assist the constables.

Unknown to the pilot or pilot-boat operator, one of the constables had decided to closely follow and was attempting to board the boat while the pilot was taking over the operation and the boat was sheering away from the ship. He had one foot on the boat's forecastle and one on the pilot-ladder while he grasped the pilot-ladder with both hands. As the distance between boat and ladder quickly widened, he pushed himself from the ladder towards the boat in an attempt to grasp the boat's handrail in a similar manner to that of the pilot. The attempt was unsuccessful and he fell into the sea between the boat and ship; both vessels were maintaining a speed of approximately 4 knots.

The height of the pilot-boat's forecastle deck above the sea was some 130 cm therefore the force of his fall was such that he did not completely submerge. Both occupants of the boat became aware of the mishap as it occurred and the engine was immediately stopped. The other constable, who had remained on the ship's deck and observed the accident, ran to the bridge to advise the master and attempted, unsuccessfully, to call the Canadian Coast Guard by radiotelephone.

At a speed of 4 knots, progress is made at approximately 2 m per second; therefore, the constable was soon left astern of the ship and no longer in the calm waters provided by her lee. The waves were running at heights of 1 to 2 metres.

The pilot and pilot-boat operator manoeuvred the boat towards where the mishap had occurred and saw the constable by the light of the boat's searchlight. He was head and

shoulders above the sea and treading water, attempting to remain above each successive wave.

One of the boat's lifejackets was thrown towards the constable but he was unable to reach it; two attempts were made to put the boat alongside him, with the pilot standing at the port side directing the operator regarding engine and helm movements. The second attempt was successful with the constable swimming the slight remaining distance to the boat.

Difficulty was found in hauling the constable from the water and into the boat; he had been immersed for an estimated 10 minutes in frigid sea water and was considerably weakened. The two people in the boat finally managed to grasp his belt and haul him on board.

The constable was seated by the engine cover, the cover partly removed, in order to receive the warmth from the engine; with the RCMP officer's agreement, the pilot-boat then proceeded to the "REEFER KNIGHT" and embarked the other constable at approximately 0330. The pilot-boat returned to the wharf at approximately 0400 and the rescued constable was assisted to his home by his colleagues where he fully recovered.

There was no apparent damage to the "REEFER KNIGHT" or to the pilot-boat; the "REEFER KNIGHT" continued her voyage.

Analysis

1. Pilotage, Summerside

Summerside Harbour is not designated a compulsory pilotage area under the Atlantic Pilotage Authority (APA) Regulations, therefore, any vessel arriving or departing is not compelled to hire the services of a pilot. Two pilots (who are both licensed by the APA) are available at Summerside and it is the usual practice for masters of visiting ships, who are not familiar with the port and do not acquire local knowledge through the regular use of the port, to hire the services of a pilot. In this instance, the "REEFER KNIGHT's" agent had hired a pilot's services at the request of the master. The pilot hired was the principal pilot and had piloted the "REEFER KNIGHT" on her arrival at Summerside; the second pilot only worked on the few occasions when two ships required pilotage services simultaneously.

Approximately 15 ships per year require the services of

pilots, therefore, both pilots hold other positions in order to supplement their earnings.

2. **Summerside Harbour**

The harbour and channel had been dredged during 1986 to a minimum depth of 6.7 m and a survey undertaken by Public Works Canada in November 1986 indicated the bank and shoals to be accurately depicted on the harbour chart; i.e., Canadian Hydrographic Service chart number 4459.

As was usual, the lighted buoys had been replaced with unlit spar buoys which are less susceptible to damage by winter ice, which covers the harbour and approaches later in the winter; however, no ice was present on this occasion. The buoys were all in their correct positions and their replacement was known to the pilot.

All other navigational aids were in position and operating. The principal aid was the leading lights (ranges) consisting of 2 fixed yellow lights situated on towers, one near the outer end of the wharf at an elevation of 11.6 m above sea level, the other placed 1422.5 m to the north-east at an elevation of 25.8 m. These ranges guide ships onto an outward bound course of 252° true through the channel when they are kept vertically disposed and viewed astern.

The maximum draught of the "REEFER KNIGHT" was 5.3 m, therefore, had she kept to the dredged part of the harbour then the least depth of water under the keel would have been 1.4 m, occurring at low water. The turning distance in the harbour when clear of the wharf is some 200 m. The length of the "REEFER KNIGHT" is 78.11 m, which allowed some 61 m clearance at either end.

3. **Manoeuvrability**

During arrival and departure, all navigational equipment and machinery was found to operate satisfactorily and there was no difficulty in manoeuvring due to any ship-related function.

4. **Communication**

The master was a Dutch national, the helmsman apparently Cypriot, the pilot's natural language is English; all communications were made in English with no apparent difficulty in understanding. The tape recorded voice of

the master as he radiotelephoned details of the grounding to a Canadian Coast Guard radio station indicated an excellent command of English.

5. Weather

The weather at the time of departure was stated to be overcast with rain, visibility 1 mile, wind south 15 knots. Some 10 minutes later and shortly before grounding the rain changed to rain mixed with heavy wet snow, which occasionally reduced visibility to less than 0.5 mile, although the lights of the town some 0.5 mile distant remained visible.

Weather records taken at the Canadian Armed Forces base at Summerside confirmed that at 2200 (5 minutes after grounding) the weather was: wind 170° true 14 knots with rain, ice pellets and snow, visibility 0.75 mile.

6. System of Pilotage

The pilot instructed the helmsman with regard to helm and rudder movements and courses to steer. He also requested engine and bow thruster movements which were executed by the master operating the engine-room telegraph and bow thruster controls. The pilot identified the ship's position by visual observations of the wharf, shore lights and buoys; he also used a radar to check distances off the wharf, and buoys etc. As is usual, the master was in command, the pilot's conduct of the ship having been delegated to him by the master.

7. Events Leading to Grounding

After successfully turning to port, the intention was to steer approximately 280° true until the harbour range lights had closed and then again to turn to port and steer 252° true, entering the channel to port of buoy DE12. During the approximate 7 minutes of this manoeuvre, a misjudgement, or misjudgements, occurred and the vessel grounded, heading 263° true with buoy DE12 some 120 m to starboard. This would indicate that the vessel had commenced her turn to port prematurely, before the range lights had closed and without verifying the position of buoy DE12 relative to the ship.

As the ship proceeded directly to sea, interviews with the ship's crew were not possible and only a brief statement was received from that source. However, there are conflicting versions of events. The pilot's explanation was that the buoys and ranges became lost to

view owing to the changing weather conditions in the rain and snow. The ship reported that the pilot was advised, following observation by radar, that the ship was to port of the channel but this advice was not accepted and the explanation of this non-acceptance was that there was a sufficient depth of water on both sides of the buoys due to the recent dredging.

8. **Speed on Grounding**

The distance from the vessel's turning position to the position of grounding is some 400 m. The first ahead movement of the engine after turning was dead-slow-ahead followed closely by slow-ahead. In the absence of recorded times and positions, it is estimated that, from the time of departure 2142 to the time of grounding 2155 (13 minutes), approximately 6 minutes would be required to turn, leaving 7 minutes to build up the vessel's speed to grounding. Travelling 400 m in 7 minutes represents an average speed of 1.85 knots. Therefore the speed at grounding would have been approximately 3 knots. This slow speed is reportedly further confirmed because it was not realized that the vessel had grounded until no movement relative to the shore was observed and nobody aboard had felt the vessel ground.

9. **Extent of Grounding**

The "REEFER KNIGHT" grounded at 2155 and low water occurred at 0027; i.e., 2 hours, 32 minutes later when the tide would have fallen a further 0.39 m approximately: therefore, the vessel's forward draught would have been reduced by approximately .39 m at low water. The bank on which she grounded consists of soft mud and there were no indications from the vessel of damage incurred due to the grounding.

10. **Pilot-boat "DYAN", Certificates and Life-Saving Appliances**

The "DYAN" was built, certified and is used for the purposes of inshore fishing. As such, she comes under Part II of the Small Fishing Vessel (SFV) Inspection Regulations. Although under 15 tons gross tonnage and therefore not required to be inspected by the Ship Safety Branch of the Canadian Coast Guard, as a SFV she is required to carry the following life-saving equipment, the provision of which is the responsibility of the owner/operator:

- one approved lifejacket for each person on board;
- one approved lifebuoy fitted with 27 m of line; and
- one watertight can containing six approved self-igniting flares.

The sole life-saving equipment carried by the "DYAN" was 4 lifejackets; however, at the time of the incident, she was operated as a pilot-boat in a harbour where pilotage is non-compulsory. There are no specific regulations or standards for such small vessels when used as pilot-boats and, in view of the size of the "DYAN", the Small Vessel Regulations would technically apply. These differ from the SFV regulations only in that for a power driven vessel not over fifteen tons that does not carry passengers and is not a pleasure craft or a fishing vessel, and is over 8 m (26 ft) but not over 12 m (40 ft) in length, the lifebuoy shall be 762 mm (30 in.) in diameter and have 9 m (30 ft) of line attached. Also, there shall be 12 red flares as opposed to 6 for a small fishing vessel. Had she carried the lifebuoy and line required for a small vessel, its use may have facilitated the rescue.

11. Radar Reflector

The "DYAN" is of wooden construction and was not equipped with a radar reflector.

Rule 40 of the International Regulations for Preventing Collisions at Sea states in part:

> ... a vessel that is less than 20 metres in length or is constructed primarily of non-metallic materials shall be equipped with a passive radar reflector ...

12. Alcohol Involvement

Alcohol had been consumed by the pilot immediately prior to having the conduct of the vessel at departure but in the absence of breathalyzer readings it is not possible to ascertain the effect on his ability.

The weather conditions, although not good, were such that they should not have contributed to the grounding and therefore the pilot's judgement comes into question.

Summerside Harbour is a "non-compulsory" port but if a licensed pilot is aboard a vessel, then the Canadian

Pilotage Act and the Atlantic Pilotage Authority Non-Compulsory Area Regulations apply.

Section 16, sub-section 3, of the Act states:

> No licensed pilot or holder of a pilotage certificate shall have the conduct of a ship within a compulsory pilotage area or be on duty on board ship pursuant to a regulation of an Authority requiring a ship to have a licensed pilot or holder of a pilotage certificate on board,
>
> (a) when he knows of any physical or mental disability that prevents him from meeting the qualifications required of a holder of a licence or pilotage certificate;
>
> (b) while his ability is impaired by alcohol or a drug or from any other cause ...

and Section 16, sub-section 4, states:

> No licensed pilot or holder of a pilotage certificate shall, while on duty, consume alcohol or any drug that may impair his ability to have the conduct of the ship.

The RCMP reacted to information concerning the consumption of alcohol and proceeded to the vessel in order to investigate information that this was a factor in the grounding under Section 237 of the Criminal Code of Canada, which states:

> Every one commits an offence who operates a motor vehicle or vessel or operates or assists in the operation of an aircraft or has the care or control of a motor vehicle, vessel or aircraft whether it is in motion or not,
>
> (a) while his ability to operate the vehicle, vessel or aircraft is impaired by alcohol or a drug; or
>
> (b) having consumed alcohol in such a quantity that the concentration thereof in his blood exceeds eighty milligrams of alcohol in one hundred millilitres of blood.

On the question of subsequent actions, it should be borne in mind that the pilot consumed alcohol prior to a

departure time of 2142 approximately, and it was not until 0230 the following morning that the vessel refloated. In other words, some time had elapsed, probably diminishing the effects of the alcohol before the vessel resumed her outward passage to the pilotage disembarkation point.

13. Legal Position of Pilot

The legal position of the pilot on board a vessel is aptly summarized by the Canadian Royal Commission on Pilotage, Ottawa, 1968, as follows:

> ... 'to conduct a ship' must not be confused with being 'in command of a ship.' The first expression refers to action, to a personal service being performed; the second to a power. The question whether a pilot has control of navigation is a question of fact and not of law. The fact that a pilot has been given control of the ship for navigational purposes does not mean that the pilot has superseded the master. The master is, and remains, in command; he is the authority aboard. He may, and does, delegate part of his authority to subordinates and to outside assistants whom he employs to navigate his ship - i.e., pilots. A delegation of power is not an abandonment of authority, but one way of exercising authority.

The master did not request the presence of the RCMP and did not dismiss the pilot. On the other hand, he did not object to the removal of the pilot provided he first obtained the services of another.

14. Rescue of RCMP Officer

Neither the pilot, pilot-boat operator nor RCMP officers wore approved lifejackets or any other type of flotation device.

The RCMP constable who fell into the sea wore clothing unsuitable for the task of disembarking to a pilot-boat from a ship's pilot-ladder when at sea. He was wearing the standard RCMP winter uniform with side-arms plus a bullet-proof vest. His outer clothing consisted of a thermally insulated top-coat made of a synthetic material which proved very difficult to grasp in its wet state. It was not until the coat had 'ridden' up and his gunbelt could be reached that the pilot and boat operator were able to haul him on board a little at a time with each roll of the boat to port.

The additional encumbrances of side-arm and bullet-proof vest, a total of some 1.4 kilograms, (3 lbs.) when dry, further reduced his capacity for survival in the cold sea water of 6°C.

The pilot possessed a flotation jacket but did not wear it. The dangers of embarking/disembarking via pilot-ladders and the history of accidents, injuries and fatalities to persons during these procedures should, perhaps, be more widely known.

This accident also draws attention to the extreme danger in which a pilot could find himself if he fell into the water when embarking/disembarking from a single-crewed pilot-boat.

15. Cold Water Survival

The cold water survival chart contained in the Canadian Red Cross Society publication, Cold Water Survival, (see annex) shows that, for the average healthy person, when wearing a lifejacket and holding still in ocean water of 6°C, forty minutes would elapse while there is still a strong possibility of survival and up to 1.75 hours if rescued; after 1.75 hours chances of survival are minimal.

The cooling rate of the body (leading to hypothermia) under the above conditions is increased by 34% when also treading water, which reduces the above periods to some 26 minutes and 1.15 hours.

The constable was not wearing a lifejacket and was heavily weighted down by his clothing and accoutrements requiring extra effort to tread water; he could barely help himself when being hauled into the boat.

It is fortuitous that the rescue was completed in the short time frame of approximately 10 minutes.

16. RCMP Policy, Lifejackets

The RCMP policy with regard to the wearing of life-jackets states that they must be worn while a passenger in, or when operating, a police-boat at night or in adverse weather conditions. There appears to be no policy for the conditions encountered by the two constables that night. In any event, their wearing of flotation devices would have been prudent under the circumstances.

17. Qualifications and Experience

The pilot had no formal marine qualifications nor was he required to under the regulations. He held a pilotage licence for Summerside, P.E.I., for vessels of unlimited tonnage, issued by the Atlantic Pilotage Authority in 1967 and had piloted at Summerside since that time, a total of 19 years. He had a total of 31 years seafaring experience, principally fishing.

The senior RCMP constable had 10 years experience on the force, 4 years at Summerside.

The junior RCMP constable, who suffered the accident, had 8 months experience on the force, 6 of which had been at training college, the last 2 at Summerside.

The pilot-boat operator held no formal marine qualifications nor was he required to under the regulations. He had 15 years experience as a fisherman including the last 5 years as operator of the pilot-boat.

Findings

The Cypriot registered motor vessel "REEFER KNIGHT" grounded on a mud shoal in Summerside Harbour due to a navigational error/errors while under the conduct of a pilot and attempting to depart the harbour.

On re-floating and having incurred no apparent damage, she departed to the pilot disembarking position where an RCMP constable fell into the sea from the pilot-ladder and was subsequently rescued by the pilot-boat.

Acknowledging that it was not possible to interview any crewmembers of the "REEFER KNIGHT", it would appear that the grounding occurred due to the following factors:

- the licensed pilot had consumed alcohol shortly prior to assuming conduct of the vessel contrary to the Pilotage Act and also possibly in contravention of the Criminal Code;

- the master allowed the pilot to take the conduct of the ship with the knowledge that the pilot had consumed alcohol; and

- the master did not exercise his authority to countermand the orders of the pilot when he (the master) became aware that the vessel was standing into danger.

It would appear that the accident to the RCMP constable occurred due to the following factors:

- he misunderstood the directives given to him by the pilot with regard to the disembarkation procedure; and

- he had no experience or knowledge of the dangers which accompany the disembarkation from a ship to a pilot-boat at sea.

Other Findings

Under adverse circumstances, the pilot and pilot-boat operator carried out a successful rescue of the RCMP constable, who was in serious difficulties.

Neither those that disembarked at sea using a pilot ladder nor the pilot-boat operator wore lifejackets or any other approved flotation devices contrary to the dictates of good seamanship.

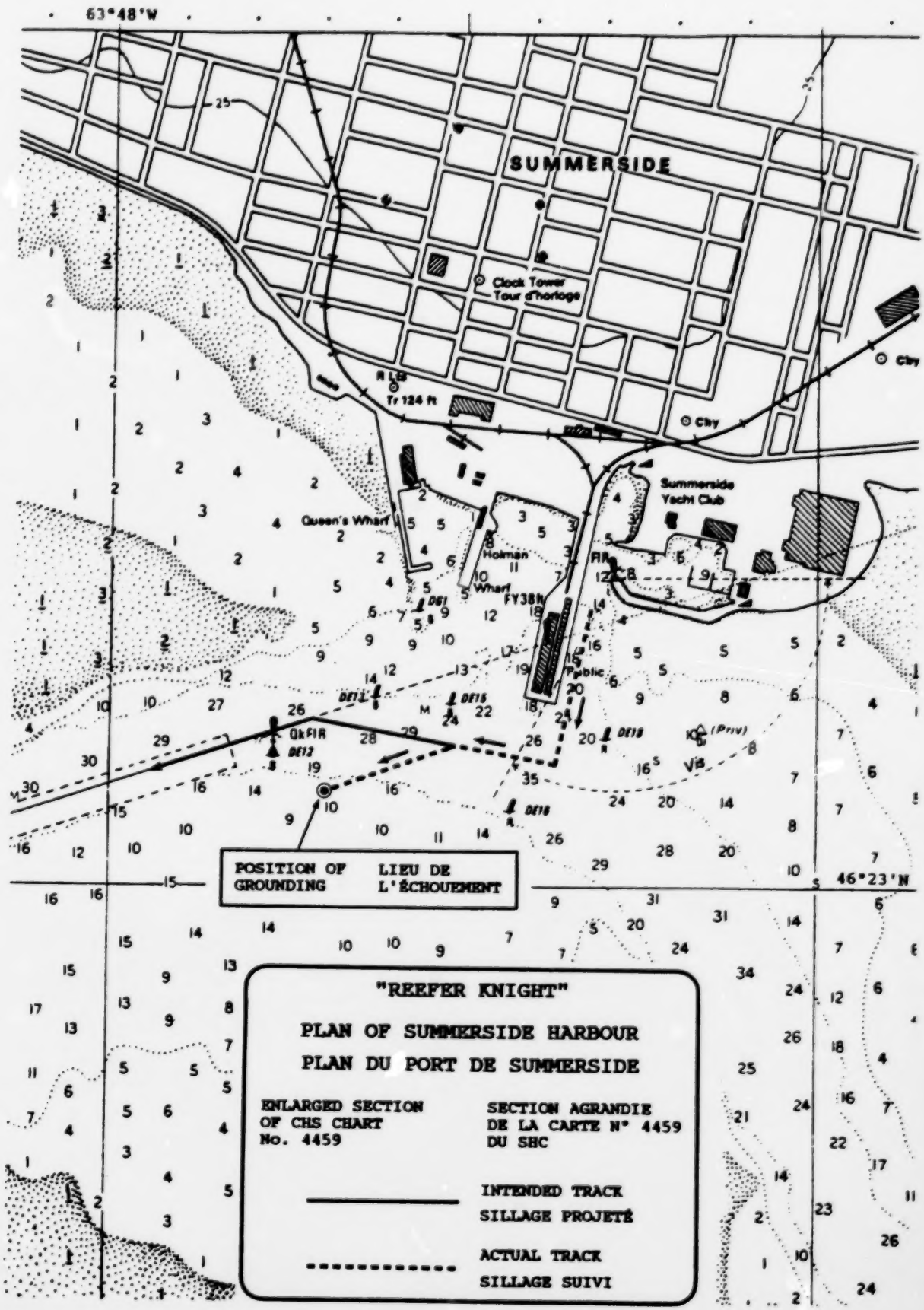
The pilot-boat did not carry the required lifebuoy and line, which use may have facilitated the rescue.

The pilot-boat was not equipped with a radar reflector in contravention of Rule 40 of the International Regulations for the Prevention of Collisions at Sea.

OTTAWA, ONTARIO
MAY 1987.

Glossary

Bow Thruster	Propeller fitted in the bow to provide transverse thrust as an aid to manoeuvring.
Classification	The assigning of characters to a ship denoting its compliance with a classification society's rules of construction.
Hypothermia	Loss of body heat, lowering of deep body core temperature leading to shock and the depression of normal body functions followed by cardiac arrest.
Pilot-ladder	Rope ladder in which each rung consists of a flat piece of wood.
Ship's Agent	Person or company engaged by a ship owner to attend to local ship's business and to safeguard the owners interests.
UTC	Co-ordinated Universal Time


63°48'W
SUMMERSIDE
Clock Tower
Tour d'horloge
R LB
Tr 124 ft
City
City
Summerside
Yacht Club
Queen's Wharf
Holman
Wharf
FY38ft
Public
Oak FIR
DE12
DE11
DE15
DE18
(Priv)
POSITION OF GROUNDING
LIEU DE L'ÉCHOUEMENT
46°23'N
"REEFER KNIGHT"
PLAN OF SUMMERSIDE HARBOUR
PLAN DU PORT DE SUMMERSIDE
ENLARGED SECTION OF CHS CHART No. 4459
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INTENDED TRACK
SILLAGE PROJETÉ
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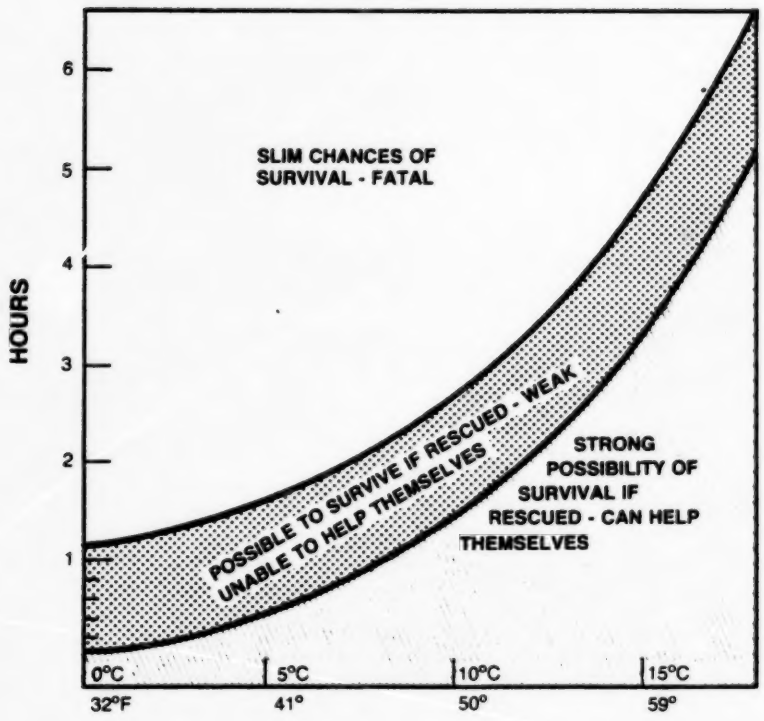
COLD WATER SURVIVAL



WATER TEMPERATURE

The accompanying graph shows average predicted survival times of average, adult humans in water of different temperatures. The figures are based on experimental cooling of average men and women who were holding still in ocean water and wearing a standard lifejacket and light clothing. The graph shows, for example, that predicted survival time is about 2½-3 hours in water of 10°C (50°F). Predicted survival time is increased by extra body fat and decreased by small body size. Although women generally possess slightly more fat than men they cool slightly faster due to their usually small body size. However, for comparable sizes, the man will cool faster.

"COLD WATER SURVIVAL"
CANADIAN RED CROSS

ANNEX III

A BRIEF GUIDE TO THE UNITS AND THE INTERPRETATION OF BLOOD ALCOHOL MEASUREMENTS

BY

Operational Life Support Unit
DEFENCE AND CIVIL INSTITUTE OF ENVIRONMENTAL MEDICINE
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TABLE 2

BLOOD ETHANOL CONCENTRATIONS AND EFFECT ON PERFORMANCE[1,3,4,5]
(ABSORPTIVE STAGE, 150 LB PERSON, MODERATE DRINKER, UNLESS OTHERWISE STATED)

12-18 FLUID OZ. *PURE* ALCOHOL TAKEN IN SHORT PERIOD OF TIME	600 MGM %		FATAL
	650 MGM %	Approx. upper limit	"UNDER THE INFLUENCE"
	600 MGM %	"Dead drunk"	
	450 MGM %	Possible coma, general anesthesia	
	400 MGM %	Stupor	
	300 MGM %	Confusion, gross incoordination	
	250 MGM %	Possible sedation, sleep	
	200 MGM %	Stumbling and falling	
6 OZ. WHISKEY OR 6 BOTTLES BEER	150 MGM %	Above 150, certainly "under the influence", possible gross evidence of intoxication, incoordination, increase of 30 % in reaction time	PROBABLY "UNDER THE INFLUENCE"
	120 MGM %	Observable speech impairment	
	100 MGM %	Denmark penalizes all drivers above 100	
	80 MGM %	Sweden and Ontario penalize all drivers above 80	POSSIBLY "UNDER THE INFLUENCE"
2 OZ. WHISKEY OR 2 BOTTLES BEER	50 MGM %	Norway penalizes all drivers above 50, slight impairment for complex tasks, increase of 10% in reaction time	PROBABLY NOT "UNDER THE INFLUENCE"
	40 MGM %	Reduction in visual acuity for heavy drinkers, 30% impairment of "precision" driving ability	
	30 MGM %	Reduction in visual acuity for moderate drinkers	
	20 MGM %	Reduction in visual acuity for abstainers	
	1 MGM %	"Normal" body content less than 1 MGM %	

Pilot Boat/Fishing Vessel "DYAN"
Bateau pilote/ Bateau de pêche "DYAN"

Note: Operating position on port side and boarding area/handrail position.

Nota: Poste de commande sur bâbord
Poste d'embarquement/rambarde.